Visual analytics of combustion on time-varying turbulent-flow

Yifei An

University of the Chinese Academy of Sciences

Guihua Shan (✉ sgh@sccas.cn)

Chinese Academy of Sciences <https://orcid.org/0000-0002-8283-2278>

Jun Liu

Computer Network Information Center Chinese Academy of Sciences

Bo Yang

Computer Network Information Center Chinese Academy of Sciences

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Abstract

Visualization is crucial for analyzing the turbulent combustion simulation. Time-varying data allows us to investigate the evolution process of the turbulent flow field. To study the combustion effects, we calculated the enstrophy of the flow field since high enstrophy region can display valuable features, and extract components based on these features. We isolated large components to track their behaviors and characterized them using volume and spatial locations, which helps scientists to explore the dynamics and temporal changes of intense events individually. We analyzed the components' structures and visualized them in contouring and statistical charts.

Full Text

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